ERS-1 and JERS-1 SAR Data Analysis for Soil Moisture

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Abstract

ERS-1 SAR data acquired on December 17, 1992; January 21, 1993 and February 25, 1993 over an Rajahmundry test site in India were studied for soil moisture and crop assesment. JERS-1 SAR data acquired on the same site (with one day difference from ERS-1 SAR acquisition) on January 22, 1993 was compared to see the effect of frequency of two SAR systems on various land targets. The data from the two SAR systems were processed for classification accuracy.

Around 12 samples of soil moisture covering bare rough & smooth fields and vegetation covered areas were considered for the analysis. The correlation coefficient between soil moisture and backscattering values for ERS-1 SAR is 0.96 where as for JERS-1 SAR is 0.74. The ERS SAR data of December 17 shows higher backscattering values compared to that of January 21 ERS SAR data for the same locations. This increase in backscattering coefficient values is due to the increase in soilmoisture of the test site due to rains between December and January. Overall classification accuracy of settlements, tobacco, pulses, paddy, fallow, reserved-forest, mango plantation, tapioka, water, sand and sugarcane using supervised maximum-likelihood classifier for JERS-1 and ERS-1 is about 30%.